

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Hachiya Takeuchi et al.

Serial No.: 10/581,851

Filed: February 22, 2007

For: BONDING APPARATUS AND
BONDING METHOD

Patent Examiner: Slawski, Brian R.

Group Art Unit: 1791

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Costa Mesa, California 92626

REQUEST FOR TELEPHONE INTERVIEW

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sirs:

Applicant respectfully requests a Telephone Interview pursuant to applicant's filing of an Applicant Initiated Interview Request Form on August 31, 2010. Please consider the following:

IN THE CLAIMS:

1. (Currently Amended) A bonding apparatus comprising a bonding part which bonds together a plurality of substrates coated with an adhesive agent, and a curing part which cures the adhesive agent of the substrates that have been bonded together, characterized in that

the bonding apparatus has conveying means which

- 5 (1) conveys the substrates coated with an adhesive agent to the bonding part;
(2) conveys the substrates from a vacuum vessel into an atmosphere at room temperature after the substrates are bonded in the vacuum vessel of the bonding part while being vacuumed; and
(3) conveys the substrates to the curing part, [[and]]

10 the conveying means has a standing part which allows the bonded substrates to stand at room temperature in the atmosphere, out of the vacuum vessel, while conveying the plurality of substrates for a time period required for any correction of warping of the bonded substrate before the adhesive agent is cured and

the conveying means is formed so that no operation of any shifting of the
15 substrates is performed in an interval extending from the bonding part to the curing part.

24. (New) A bonding apparatus comprising a bonding part which bonds together a plurality of substrates coated with an adhesive agent, and a curing part which cures the adhesive agent of the substrates that have been bonded together, characterized in that

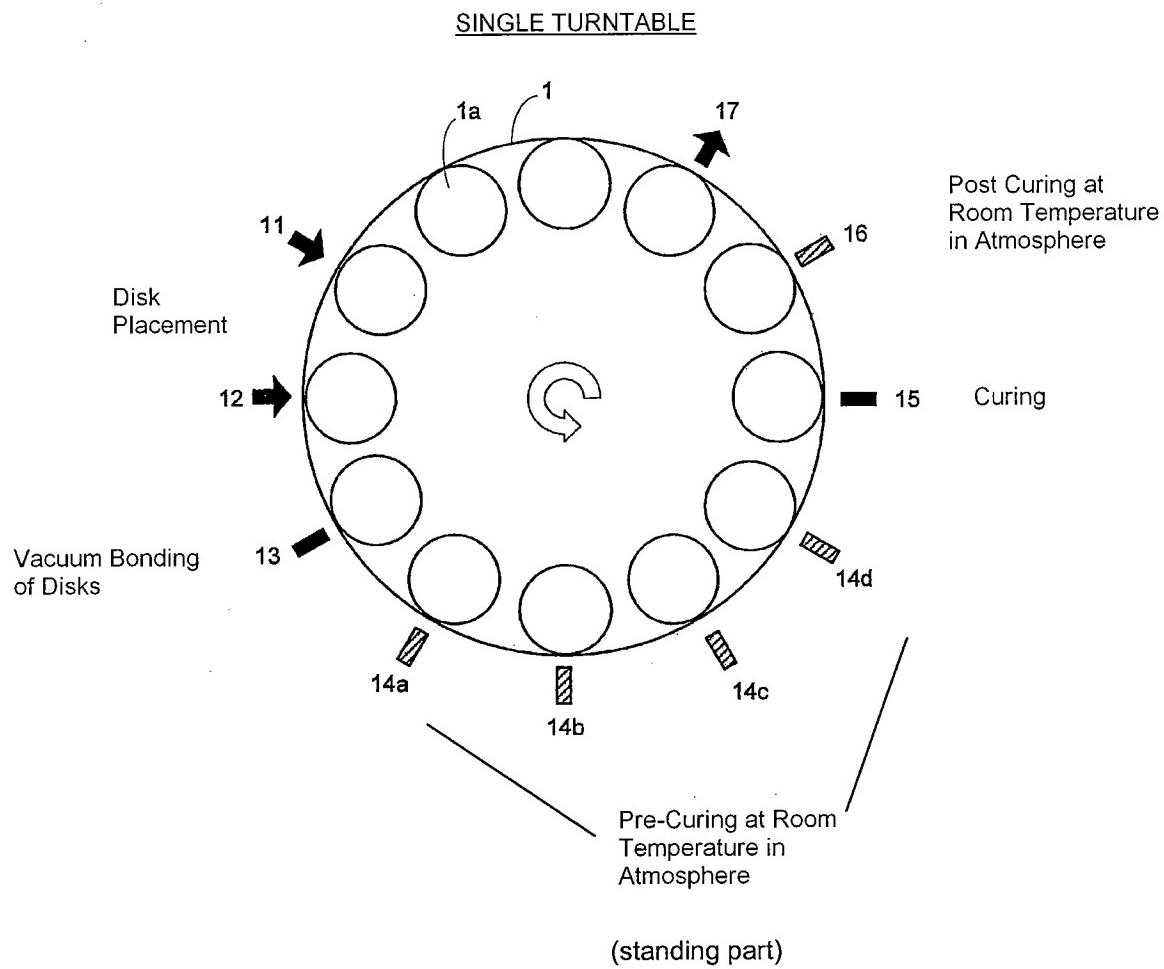
the bonding apparatus has conveying means which

- 5 (1) conveys susceptors carrying the substrates coated with an adhesive agent to the bonding part;

- (2) conveys susceptors carrying the substrates from the vacuum vessel into an atmosphere at room temperature after the substrates are bonded in the vacuum vessel of the bonding part while being vacuumed; and
- 10 (3) conveys susceptors carrying the substrates to the curing part, the conveying means has a standing part which allows the bonded substrates to stand at room temperature in the atmosphere, out of the vacuum vessel, while conveying the plurality of substrates for the time period required for correction of warping of the bonded substrate before the adhesive agent being cured, and
- 15 the conveying means is formed so that no operation of any shifting of the substrates is performed to settle into a stable state in an interval extending from the bonding part to the curing part.

REMARKS

As disclosed in Figure 1, we specifically provide apparatus in a compact configuration that permits disc relaxation without the addition of any stress to our substrates before curing.



In our claims, the substrate is relieved from stress prior to a curing which distinguishes over the cited references.

“Stand” is to set the substrates in a state where stress is not added from an outside contact. Thus, the substrates do not receive any external generated stresses from any other devices; that is, the substrates are not contacted nor subject to exterior forces while on a support turntable apparatus handling device.

“No operation of any shifting” of the substrates to move them from one place to another place means that no holding or handling operation contacts the substrates directly.

Accordingly the substrates, after bonding and before curing, can be settled into a stable state. The substrates are not placed in an unstable state by any shifting operation, so that any tilting can be suppressed. Furthermore, the substrates receive no stress when they are transferred between two turntables (see Figures 7 and 8) since susceptors can carry the substrates as set forth in Claim 24. A transfer means only pushes susceptors to move the substrates from one turntable to another without contacting the substrates by the transfer means.

Matsumoto (U.S. Publication 2003/0104097) discloses an apparatus which adds stress to two sheets of adhered disc substrates.

“Then, two sheets of adhered disc substrates mounted on receiving stand 17 of a temporarily mounted position P5 is moved and mounted on turntable 20 by means of movably mounting mechanism 19. Movably mounting mechanism 19 is provided with two holding arms.” (Paragraphs [0054] and [0055].)

“A weight (not shown) such as an aluminum plate or heat-resistant glass (on a center of which a penetrated hole is provided) is mounted on the disc substrates mounted on turntable 20 at the subsequent position.” (Paragraph [0056])

The substrates are stressed when the holding arms attach and detach the substrates to move them and additional intentional stress is applied to the substrates when mounted with a weight.

Kotoyori (Japanese 2002-074759) discloses an apparatus to add stress to the uncured layered discs.

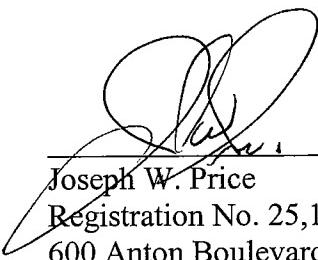
“A feeding arm 10 and a turntable 11 are arranged near the positioning stage 5. The feeding arm 10 is a unit for vacuum-absorbing the uncured layered discs 4 subject to ultraviolet irradiation onto the positioning stage 5 to feed above the turntable 11.” (Paragraph [0036])

"The feeding arm 10 sets the uncured layered disks 4 on the support member 12 in the supply position P1 of the turntable 11." (Paragraph [0041])

The substrates are stressed when the feeding arm vacuum-absorbs and releases to the substrates to move them.

Very truly yours,

SNELL & WILMER L.L.P.



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